

SYSTEMS PLAN

ON-SITE DISPOSAL FACILITY PROJECT

20100-PL-008

Revision 0

May 1997

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Fernald, Ohio

Under Contract DE-AC05-92OR21972

United States Department of Energy

Fernald Environmental Management Project

Fernald, Ohio

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ATTACHMENTS

ATTACHMENT A:	Owner's Manuals for Leachate Management System Equipment (to be provided by the Subcontractor as Part of Construction Acceptance)
ATTACHMENT B:	Owner's Manuals for Decontamination Facilities (to be Provided by the Subconstruction Contractor as Part of Construction Acceptance)

1.0 INTRODUCTION

1.1 OVERVIEW

This Systems Plan describes the inspection, monitoring, and maintenance activities that will be undertaken at the Fernald Environmental Management Project (FEMP) On-Site Disposal Facility (OSDF), Fernald, Ohio. These activities apply to the leachate management system, final cover system, temporary facilities, and access roads within the battery limit of the OSDF.

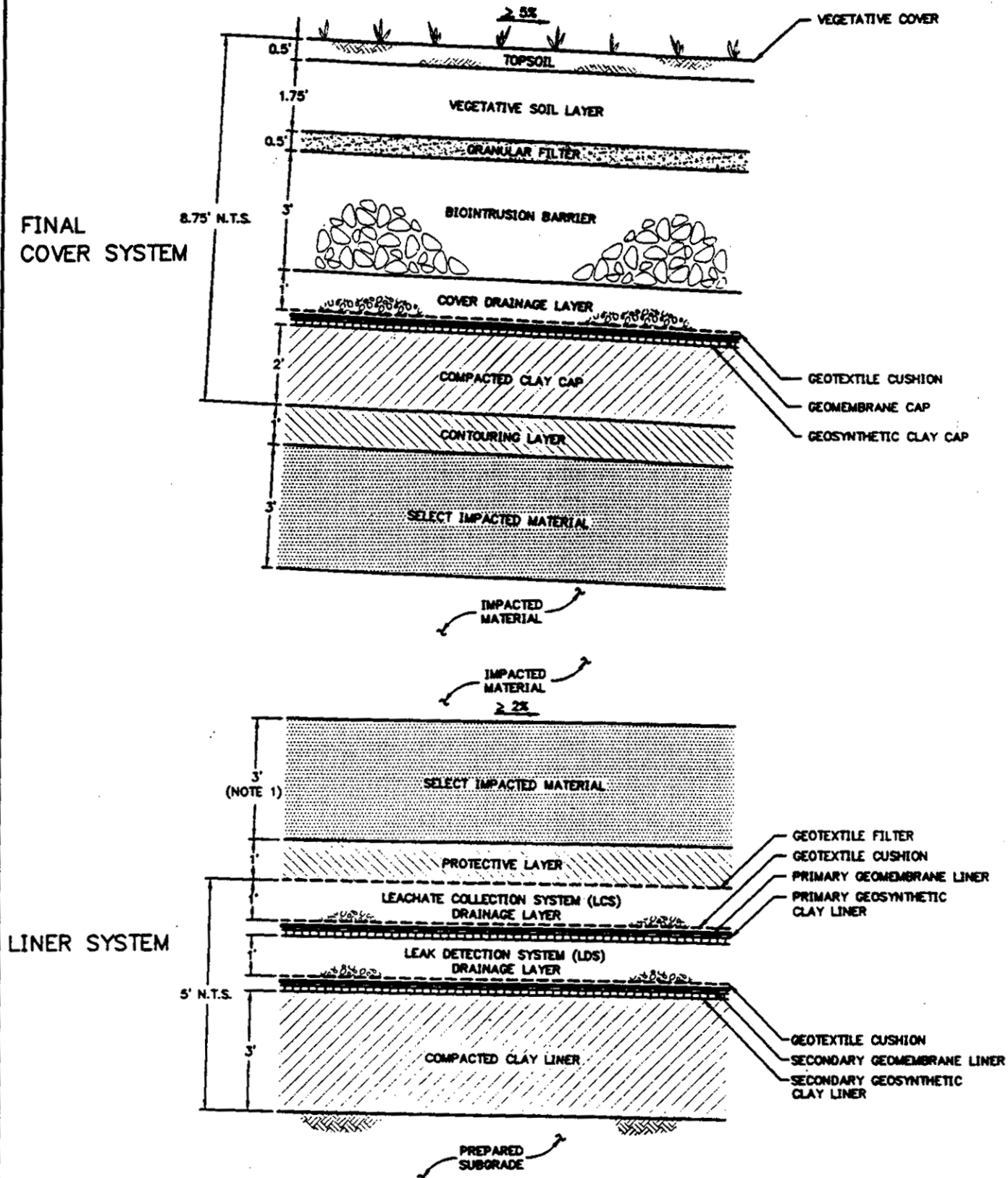
This plan addresses the systems activities to be implemented throughout construction, material placement, and closure of the OSDF. The inspection, monitoring, and maintenance activities for the 30 year post-closure monitoring period prescribed in the *Final Record of Decision for Remedial Actions at Operable Unit 2 (OU2 ROD)* [DOE, 1995a] will be addressed in the *OSDF Post-Closure Care and Inspection Plan* [FDF, 1997]. Inspection, monitoring, and maintenance activities beyond the 30 year post-closure monitoring period will be addressed through future amendments to this plan and the *OSDF Post-Closure Care and Inspection Plan*.

1.2 PROJECT DESCRIPTION

The OSDF will be constructed to contain impacted materials derived from remediation of the operable units at the FEMP. All material destined for OSDF disposal will be required to meet OSDF waste acceptance criteria (WAC). The OU2 ROD has established an initial WAC for the OSDF of 346 pico Curies/gram (pCi/g) of uranium-238 (U-238) or 1,030 parts per million (ppm) total uranium. The estimated total volume of material destined for OSDF disposal is 2.5 million cubic yards (1.9 million cubic meters) bank/unbulk. Approximately 80 percent of this material is impacted soil, with the remainder consisting of building demolition rubble, fly ash, lime sludge, municipal solid waste, and small quantities of miscellaneous other materials.

The design approach for the OSDF is presented in the document, “*Final Remedial Design Work Plan for Remedial Actions at Operable Unit 2*” [DOE, 1995b]. The design of the OSDF, as currently developed, is presented in the “*Final Design Package, On-Site Disposal Facility*” [GeoSyntec, 1997a]. The design of the OSDF includes a liner systems, placement of impacted material, final cover systems, leachate management systems, surface-water management systems, and other ancillary features. The liner and final cover systems details for the OSDF are shown in Figure 1-1.

LINER AND COVER SYSTEM DESIGN ON-SITE DISPOSAL FACILITY



NOTE:

1. SELECT IMPACTED MATERIAL THICKNESS ABOVE LINER SYSTEM MAY BE DECREASED TO 2 FEET IF THE FIRST LIFT OF MATERIAL TO BE PLACED OVER THE SELECT IMPACTED MATERIAL CONSISTS OF SOIL OR RELATIVELY SMALL SIZE DEBRIS THAT CAN BE PLACED IN CONTROLLED LIFTS.



GeoSYNTEC CONSULTANTS
ATLANTA, GEORGIA

FIGURE NO.	1-1
PROJECT NO.	GE3900-16.4
DOCUMENT NO.	F9650002.CDO
FILE NO.	F95C001.DWG

1.3 PLAN SCOPE

This OSDF Systems Plan establishes the inspection, monitoring, and maintenance activities necessary to achieve the proper performance of the OSDF. The scope of this plan includes:

- Maintaining the OSDF throughout construction, impacted material placement and closure of the OSDF. (While the Systems Plan also includes procedures to be used to maintain the OSDF in the 30 year post-closure monitoring period, those post closure activities are presented for illustrative purposes only, as post closure activities are addressed in a separate *Post-Closure Care and Inspection Plan*);
- Inspecting, and monitoring, the leachate management system;
- Stabilizing the final cover system surface with grass species that limit the erosion of topsoil, are compatible with local vegetation, and require minimal maintenance;
- Maintaining the OSDF seasonal cover, when in use;
- Monitoring temporary support facilities during construction; and
- Maintaining vehicular access around the OSDF.

This Systems Plan has been prepared for regulatory review. Prior to and during construction of the OSDF, this Systems Plan will be updated to contain equipment manuals and operating and maintenance procedures for the specific equipment and system procured and installed by the Subcontractor. This updated plan will serve as a working document that will be periodically updated during the active life and closure of the OSDF. In no case, however, will the updating result in a reduction in inspection, monitoring, maintenance and operational activities below the levels required by this plan unless approval for such reduction is formally obtained from the DOE and EPA/OEPA.

1.4 PLAN ORGANIZATION

The remainder of this Systems Plan is organized as follows:

- The requirements from the OSDF design criteria package (DCP) applicable to this plan, as well as other general requirements applicable to the plan, are presented in Section 2.0;
- Activities for the OSDF leachate management system are presented in Section 3.0;

- Activities for the OSDF final cover system are contained in Section 4.0;
- Activities for the OSDF seasonal cover are described in Section 5.0;
- Activities for the OSDF temporary support facilities, utilities, and site security fence are addressed in Section 6.0;
- Activities for the permanent access roads are presented in Section 7.0; and
- Recordkeeping requirements are presented in Section 8.0.

1.5 PLAN RESPONSIBILITIES

Implementation responsibilities for this Systems Plan are as follows:

- *Construction Manager (CM)*: responsible for ensuring that OSDF maintenance, monitoring, and inspection activities are performed in accordance with this plan, on schedule, and by suitably trained personnel; responsible for receiving and reviewing reports and documentation from the Subcontractor, and requesting involvement of Resident Engineer, as required;
- *Subcontractor*: responsible for construction, impacted material placement, and closure of the OSDF facility. The Subcontractor shall implement this plan until the OSDF is fully closed.

The Subcontractor shall be responsible for preparing the necessary health and safety plan that meets all health and safety requirements identified in the FEMP Project Specific Health and Safety Requirements Matrix (PSHSRM). In addition, the H&S personnel will perform periodic audits of the Subcontractor to ensure compliance; H&S personnel will have stop-work authority (in the event of threat to worker and/or public safety) until the proper corrective action is taken. The H&S Officer assigned to the OSDF project will be the single point of contact for all safety, industrial hygiene, fire protection, and radiological issues or concerns.

The Subcontractor will be required to provide a H&S field representative who will be responsible for the Subcontractor's compliance with all H&S requirements. The Subcontractor H&S representative will be required to report all safety concerns and incidents to the H&S Officer.

Radiological Technicians will also be assigned to the OSDF project. In conjunction with the H&S Officer assigned to the project, the Radiological Technician(s) will help to ensure radiological compliance throughout the project. Radiological compliance may include the radiological monitoring of equipment,

materials, soil, and air during excavation, placement and closure to help ensure proper segregation, storage, or disposition; routine inspection, monitoring, and recording of area radon monitors and/or other radiation detection monitors; and radiological monitoring of personnel. The PSHSRM will be the basis for the required monitoring and will identify the action levels that will ensure personnel safety by limiting exposure.

1.6 RELATED IMPLEMENTATION PLANS

Several other implementation plans have been prepared for the OSDF that contain information relevant to this plan. Other plans of direct relevance to this plan are listed below along with a brief statement of the relationship of the work plan to this plan:

- *OSDF Borrow Area Management and Restoration (BAMR) Plan* [GeoSyntec, 1997b]: provides procedures to strip, develop, maintain, and restore the OSDF soil borrow area;
- *OSDF Construction Quality Assurance (CQA) Plan* [GeoSyntec, 1997c]: provides testing and certification standards which are required for the OSDF construction and materials or equipment which may require replacement or repair during construction activities;
- *OSDF Impacted Materials Placement (IMP) Plan* [GeoSyntec, 1996]: outlines impacted material acceptance criteria (WAC) and provides procedures for impacted materials disposal in the OSDF;
- *OSDF Surface-Water Management and Erosion Control (SWMEC) Plan* [GeoSyntec 1997d]: provides details of temporary and permanent E&S controls for the OSDF (including maintenance requirements for channels and sediment control);
- *OSDF Post-Closure Care and Inspection Plan* [FDF, 1997]: describes post-closure inspection, operation and maintenance activities.

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2.0 APPLICABLE REQUIREMENTS

2.1 OVERVIEW

Regulatory, DOE, and other requirements applicable to this Systems Plan are contained in the Design Criteria Package (DCP) for the OSDF. The DCP is contained with the overall OSDF Design Package [GeoSyntec, 1997a]. These requirements take the form of applicable or relevant and appropriate requirements (ARARs) and to be considered criteria (TBCs) as determined by the record of decision for each of the various FEMP operable units, functional requirements, and general design criteria. The DCP requirements applicable to this Systems Plan are described below.

2.2 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

ARARs that are addressed by this Systems Plan are:

- OAC 3745-27-08(C)(4)(b): Leachate collection systems pipes shall (i) be provided with access for clean-out devices; (ii) be of a length and configuration that do not exceed the capabilities of clean-out devices; and (iii) resist damage caused by differential settlement.
- OAC 3745-27-08(C)(4)(e): Lift stations shall be equipped with automatic high level alarms located no greater than 6 ft (2.0 m) above the invert of the leachate inlet pipe. Lift station pumps shall be of adequate capacity and shall automatically commence pumping before the accumulated leachate activates the high level alarm.
- OAC 3745-27-08(C)(5): Leachate conveyance and storage structures located outside of the limits of disposal shall be no less protective of the environment than the disposal facility, and shall:

Be monitored, as required by EPA and OEPA;

For storage tanks, be provided with secondary containment;

For leachate lines, be provided with double containment; and

For storage structures, have a minimum of one week of storage capacity as established by design using assumptions simulating final closure of the facility.

- OAC 3745-27-08(C)(8): Access roads shall allow passage of vehicles during all weather conditions with minimum erosion, dust generation, and with adequate drainage. Grades are not to exceed 12 percent.

Post-closure care activities for all sanitary landfill facilities shall include, but are not limited to:

Continuing operation and maintenance of the leachate management systems and surface-water management systems; and

Maintaining the integrity and effectiveness of the cap systems, including making repairs to the cap systems as necessary to correct the effects of settling, dead vegetation, subsidence, erosion, leachate outbreaks, or other events, and preventing run-on and run-off from eroding or otherwise damaging the cap systems.

- OAC 3745-27-19(E)(26): The integrity of the engineered components of the landfill shall be maintained and any damage to, or failure, or the components shall be repaired.
- OAC 3745-27-19(J)(1)(4): If ponding or erosion occurs on areas of the landfill facility where solid waste is being, or has been, deposited, action will be taken to correct the conditions causing the ponding or erosion.
- OAC 3745-27-19(K)(1): If leachate is detected on the surface of the landfill facility, then the outbreak(s) shall be repaired and:

Leachate shall be contained and properly managed at the sanitary landfill facility;

If necessary, leachate shall be collected and disposed in accordance with paragraph (K)(5) and (K)(6) of OAC 3745-27-19; and

Actions shall be taken to minimize, control, or eliminate the conditions which contribute to the production of leachate.

- OAC 3745-27-19(K)(2): At least one lift station back-up pump shall be kept at the disposal facility at all times.
- OAC 3745-27-19(K)(3): The collection pipe network of the leachate management systems shall be inspected after placement of the initial lift of waste to ensure that crushing has not occurred and shall be inspected annually thereafter to ensure that clogging has not occurred.
- OAC 3745-68-10: After final closure, the owner or operator shall comply with all post-closure requirements, including maintenance and monitoring throughout the post-closure care period. The owner or operator shall:
 - 1) Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events;
 - 2) Continue to operate the leachate collection and removal systems until leachate is no longer detected;
 - 3) Maintain and monitor the leak detection systems;

- 4) Maintain and monitor the ground-water monitoring systems;
- 5) Prevent run-on and run-off from eroding or otherwise damaging the final cover; and
- 6) Protect and maintain surveyed benchmarks.

2.3 FUNCTIONAL REQUIREMENTS AND DESIGN CONSIDERATIONS

The DCP contains a variety of functional requirements and design considerations that have been established for the OSDF. These functional requirements are specific facility design or performance criteria required by DOE. Design considerations represent those other design, construction, or operational criteria identified by the OSDF architect/engineer (A/E) as necessary for the OSDF to successfully fulfill its intended function. Criteria relevant to the OSDF leachate management system are provided in Section 2.5 of the DCP. Criteria relevant to the final cover system are described in Section 2.6. Criteria applicable to the support facilities and utilities are presented in Section 2.9.

2.4 OTHER CRITERIA

Criteria applicable to this plan consist of those industry-standard practices that have proven effective at other waste disposal facilities. Inspection and monitoring requirements from the manufacturers and suppliers of materials and equipment to be installed at the OSDF are also criteria relevant to this plan.

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3.0 LEACHATE MANAGEMENT SYSTEM

3.1 OVERVIEW OF SYSTEM

The double-liner systems of each OSDF cell contains a leachate collection system (LCS) and a leak detection system (LDS) (see Figure 1-1). These systems are designed to convey any liquids that enter the system through pipes (i.e., the LCS pipes and the LDS pipes) to manholes located outside each cell. Liquids that enter the LCS include: (i) leachate generated by infiltration of water through the impacted material into the LCS; and (ii) impacted runoff from active portions of the OSDF which infiltrate into the LCS. Liquid that enters the LDS is primarily precipitation that percolates into the LDS prior to placement of the primary liner. Liquid that collects in the LDS manhole of a cell shall be pumped to the adjacent LCS manhole. In turn, the LCS manholes are connected by a leachate transmission system (LTS) gravity line which conveys leachate from the LCS pipes in the manholes via gravity flow to either a temporary gravity line or a permanent lift station. The temporary lift gravity line is a double-wall pipe which conveys flows to the permanent lift station during earlier stages of OSDF operation. From the permanent lift station, leachate is pumped through a permanent double-wall forcemain to the Bionitrification Surge Lagoon (BSL)

The locations of the LCS, LDS, and LTS gravity lines manholes, temporary gravity line and permanent lift stations are presented on the Construction Drawings.

This Systems Plan addresses all leachate management systems components up to the LTS gravity line or temporary gravity line discharge point into the permanent lift station.

3.2 BASIC SYSTEM OPERATION

The basic operation of the OSDF leachate management systems is described below.

- The LCS and LDS pipes from the liner system to the LCS and LDS manholes for each cell consist of double-wall HDPE pipes (i.e., inner carrier pipes and outer containment pipes). Each pipe drains by gravity from the OSDF cell and terminates in a LCS or LDS manhole.
- The LDS manhole allows for direct discharge of flow from the LDS carrier pipe into a primary containment vessel located inside the manhole. The LDS manhole serves as a secondary containment structure for the primary containment vessel. The LDS manhole has provisions for the monitoring of liquid in the primary containment vessel component of the manhole. The primary containment vessel has a 2 in. (50 mm) diameter liquid level pipe, a 2 in. (50 mm) diameter suction pipe, and a 2 in. (50 mm) diameter discharge pipe. The discharge pipe is connected to the LTS gravity line in the adjacent LCS manhole. The LDS

containment pipe has a monitoring port and fixed end seal within the LDS manhole to verify the absence of liquid in the annular space between the carrier pipe and containment pipe.

- Each LDS manhole has a cleanout adjacent to the manhole for maintaining the LDS carrier pipe. The LDS manhole also has access provisions to install a sump pump to allow pumping of construction water that drains from the LDS prior to the placement of impacted material in the OSDF.
- The LCS manhole allows for direct discharge of flow from the LCS carrier pipe into the LTS gravity line that passes through the manhole. The LCS carrier pipe has temporary valves for regulating leachate flow into the gravity line during OSDF construction, impacted material placement, and periods of gravity line maintenance, extension, repair, etc. These valves shall be removed (and replaced with a solid-wall HDPE spool) from the LCS carrier pipe prior to final closure of the OSDF (so that, in the long term, there are no obstructions in the pipe). The LCS carrier pipe in each LCS manhole also has a sampling port for obtaining leachate samples. Each LCS manhole has an inlet for a redundant LCS carrier pipe. The redundant carrier pipe has a valve (secured in a closed position) and sampling port (for periodically confirming the absence of liquid in the pipe). The redundant carrier pipe valve is configured so that it can be opened to allow flow to the LTS gravity line at any time in the event of a failure due to clogging of the primary LCS carrier pipe. This valve shall also be removed (and replaced with solid-wall HDPE spool) after final closure of the entire OSDF. Both the primary and redundant LCS containment pipes have monitoring ports and fixed end seals within the LCS manholes to verify the absence of liquid in the annular space between the carrier pipe and the containment pipe.
- LCS manholes are equipped with liquid level alarms, consisting of a submersible liquid level sensor, logic controller, and alarm light. The liquid level sensor shall be calibrated such that the alarm is activated when the liquid level in the LCS manhole exceeds 2 in. (50 mm). The LCS and LDS manholes have pipe supports for the LTS gravity line and the LDS carrier pipe, respectively.
- The LTS gravity line and LCS and LDS manholes will be installed in stages, progressively advancing from north to south in conjunction with the progressive development of the OSDF. Each stage may involve the installation of manholes and LTS gravity line for several cells. At a given stage, the LTS gravity line will run through all of the manholes previously installed and those installed for a given stage to the southernmost manhole installed in that stage. This southernmost manhole serves as a connector point to the temporary gravity line.
- The LTS gravity line consists of a double-wall HDPE pipe with a 6 in. (150 mm) diameter inner carrier pipe and a 10 in. (150 mm) diameter outer containment pipe. The inner carrier pipe of the LTS gravity line will be continuous over its entire length (i.e., from its upgradient to its discharge point). The outer containment pipe will be continuous between the LCS manholes and joined to the manhole walls.
- The LTS gravity line will be equipped with a vent and 4 in. (100 mm) diameter quick-connect hose connection at its northern end. The purpose of the vent is to prevent pressure or vacuum buildup in the systems. The quick-connect hose allows pressure testing of the systems and

jetting water in the line to clean it. The gravity line will have cleanouts on the upgradient end of each LCS manhole for maintenance.

- The butterfly valve located in each LCS manhole will be manually adjusted in conjunction with the flow meter to control the rate of flow into the temporary gravity line. The temporary gravity line control systems are designed to allow flow at a rate no greater than the storm design flow rate, which has been established as 200 gallons per minute (gpm) (760 liters per minute (lpm)).
- Unneeded portions of the temporary gravity line are to be taken out of service as part of each subsequent stage of construction. At that time, the LTS gravity line should be extended either to the next temporary gravity line connection location or to the permanent lift station, as appropriate.
- The temporary gravity line between the LTS gravity line and the permanent lift station consists of double-wall HDPE pipe. The inner carrier pipe is 6 in. (150 mm) in diameter and the outer containment pipe is 10 in. (254 mm) in diameter. The temporary gravity line will have a slope of at least 0.25 percent towards the permanent lift station. During winter months, the temporary gravity line must be covered by at least a 3 ft (0.9 m) thick soil cover for frost protection.
- The permanent lift station is provided with secondary containment which is designed so that it can be monitored for the presence of leakage.
- The permanent lift station is capable of storing the quantity of leachate generated during a one-week period using design assumptions simulating final closure of the OSDF.
- Prior to the discharge of liquid into the permanent lift station, the liquid passes through a motor-operated inflow valve which closes automatically in the event of power failure or if liquid levels in the lift station rises above the high level alarm setpoint or any level that would cause an electrical short or damage to equipment in the lift station). The lift station also has a manual means for closing the lift station motor-operated inflow valve. Therefore, this valve can be closed manually, if needed, until appropriate maintenance activities can be implemented.
- The permanent lift station will be equipped with a pumping system to transfer liquids in the lift station to the BSL.

Each major component of the leachate management systems will be identified (i.e., numbered) during installation. The Subcontractor will be required to provide manufacturer's equipment operating and maintenance instructions as part of Construction Acceptance Testing. Construction Acceptance Testing is the performance of all necessary testing to demonstrate that subcontractor supplied or installed equipment and system are installed satisfactorily and safely in accordance with the Construction Drawings and Specifications.

3.3 LDS AND LCS OPERATION PROCEDURES

The LDS and LCS of each OSDF cell shall be operated by the Subcontractor in conformance with the requirements of this section.

- Systems shall not be accepted for operation until the Subcontractor has completed all the requirements of the Construction Acceptance Testing.
- Prior to the start of active operations of a cell, the Subcontractor shall maintain a sump pump in the primary containment vessel of the LDS manhole and pump accumulated water to the FEMP stormwater management system. The LDS flow rate shall be less than 10 gpm (38 lpm) (due to drainage of construction water from the LDS) prior to the start of cell operation.
- Prior to the start of active operations of a cell, the subcontractor shall obtain a sample of the liquid in the primary containment vessel and test for constituents that are defined by the Construction Manager.
- Prior to the start of active operations of a cell, the Subcontractor shall set the level transmitter for the primary containment vessel of the LDS manholes to activate the alarm *i.e.*, alarm light for a liquid level 6 in. (150 mm) below the top of the vessel.
- Prior to the start of active operations of a cell, the Subcontractor shall set the level transmitter for the secondary containment vessel of the LCS manhole to activate the alarm for a liquid level 2 in. (50 mm) above the bottom of the vessel.
- If an alarm is activated, the Subcontractor personnel shall respond within one hour to assess the reasons for the alarm sounding and to take corrective actions.
- Prior to the start of active operations of a cell, the Subcontractor shall attach an auxiliary cleanout to the LTS gravity line cleanout adjacent to the cell.
- The butterfly valve on the LCS carrier pipe shall be maintained in the closed position until the start of impacted material placement in the cell. The Subcontractor shall manage runoff that falls into the cell prior to the start of impacted material placement as stormwater. This water shall be pumped using a sump pump or other means to the FEMP stormwater management system.
- Prior to start of active operations of a cell the Subcontractor shall verify the absence of liquids in the LCS, redundant LCS, and LDS containment pipes by opening the monitoring ports on each containment pipe and visually observing for collection of any liquid present.
- After impacted material placement begins in a cell, all water in the cell may be discharged to the FEMP stormwater management system. The butterfly valve on the LCS carrier pipe shall be opened to allow discharge to the LTS gravity line, but shall be positioned (throttled) such that flow rate to the permanent lift station does not exceed 200 gpm (760 lpm).

- The impacted runoff catchment area is designed to allow impacted runoff to enter directly into the LCS collection system. If the system becomes inoperable (*e.g.*, clogging of the sacrificial geotextile has occurred) the subcontractor shall remove impacted runoff by pumping from the impacted runoff catchment area to the auxiliary cleanout.
- The valve on the redundant LCS carrier pipe shall be maintained closed at all times, unless overridden by conditions dictated in Section 3.4.
- The butterfly valve on the LCS carrier pipe shall be maintained open at all times during the active life, closure period, and post-closure period of the OSDF, except for those periods where the valve needs to be closed for systems maintenance and repair or in the event of an operational emergency.
- The LCS manholes are designed as a closed system; liquids should not accumulate in these manholes. The level transmitter in the secondary containment in each LCS manhole shall be set to activate the alarm light for a liquid level of more than 2 in. (50 mm) above the floor of the manhole. If the alarm is activated, Subcontractor personnel shall respond within one hour to assess the problem and to take appropriate corrective actions.
- Throughout active operations of the OSDF, the Subcontractor shall daily measure and record the liquid quantity in, and flow rate into, the primary containment vessel of each LDS manhole. A portable suction pump shall be used to pump this liquid through the LDS suction pipe and into the LDS discharge pipe. The LDS primary containment vessel shall be evacuated as often as necessary to prevent overtopping of the vessel.
- The Subcontractor shall provide the CM with whatever equipment or assistance the CM may periodically request in connection with obtaining samples of liquids from the LCS and LDS sampling or monitoring ports.

The Subcontractor shall follow all Occupational Safety and Health Administration (OSHA), DOE, and FEMP site requirements for confined space entry when performing monitoring and inspection activities in the LDS and LCS manholes.

3.4 LDS AND LCS INSPECTION AND MAINTENANCE ACTIVITIES

The LCS and LDS shall be inspected and maintained in accordance with the schedule and activity requirements outlined in Table 3-1, or until leachate is no longer generated and an alternative

TABLE 3-1
LEACHATE COLLECTION AND LEAK DETECTION SYSTEMS
INSPECTION AND MAINTENANCE ACTIVITIES

Component	Inspections		Conditions to Check	Remedy
	Active Period	Closure Period		
LDS	Weekly	Weekly for the first three months after cell closure, then monthly for the remainder of the first year	<p>condition of submersible level transmitter and appurtenances</p> <p>leakage from primary containment vessel</p> <p>liquid in LDS containment pipe</p>	<p>check level transmitter operations (e.g., operating temperature range, accuracy, etc.), electrical connections, and alarm light.</p> <p>check for source of leak; if source identified then take appropriate corrective measures (i.e., spot-seal vessel, replace vessel, etc.)</p> <p>keep monitoring port drained; perform video inspection of pipe and attempt to identify source of leakage; develop plan to mitigate effects</p>
LCS	Weekly	Weekly for the first three months after cell closure, then monthly for the remainder of the first year	<p>condition of submersible level transmitter and appurtenances</p> <p>condition of shutoff valve</p> <p>liquid in LCS containment pipe</p> <p>liquid in redundant LCS carrier pipe</p>	<p>check level transmitter operations (e.g., operating temperature range, accuracy, etc.), electrical connections, strobe light, and radio transmission</p> <p>check valve operability; correct any deficiencies</p> <p>keep monitoring port drained; perform video inspection of pipe and attempt to identify source of leakage; develop plan to mitigate effects</p> <p>drain pipe into LTS gravity line</p>
LDS & LCS Pipes	prior to the start of active operations, then annually	Annually	Video inspect for: crushing of pipe clogging of pipe	<p>flush clogged pipe with water or mechanically clean</p> <p>insert small diameter pipe in crushed pipe, if possible</p> <p>replace crushed pipe if crushed portion is outside of the cell</p> <p>utilize redundant LCS pipe</p>

Notes: (1) Frequencies of inspection and maintenance activities are preliminary.
(2) Leachate collection and leak detection systems shall be inspected after the occurrence of major earthquakes.

activity schedule has been approved by EPA and OEPA. Specific details of the required inspection and maintenance activities are given below.

According to ARARs (OAC 3745-27-19(k)(3)), the LCS and LDS pipe network shall be inspected after placement of the initial lift of impacted material to ensure that crushing has not occurred, and annually thereafter to ensure that clogging has not occurred. Clogging can occur by deposition of particles within the pipe or by biological growth inside the pipe. The Subcontractor shall inspect this pipe network between the manhole and the first 100 ft (30 m) of subdrain pipe inside the cell. The portion of the pipe beyond this point inside the cell is considered to be redundant because the gradation of the LCS granular drainage material is designed to limit the level of leachate on the geomembrane liner to less than 1 ft (0.3 m) without need for a subdrain pipe.

Access to the LCS and LDS pipes for inspection shall be through HDPE cleanouts located adjacent to the LDS or LCS manholes. Inspections shall be performed using a video camera or other appropriate inspection equipment. The inspection equipment shall have the ability to monitor its location (e.g., distance counter), be sized to fit within the LCS and LDS inner carrier pipes indicated on Construction Drawings and be capable of being pushed the length to be inspected.

If an inspection indicates that a LCS or LDS pipe is obstructed, the pipe shall be flushed by pumping fresh water from a water truck through a hose inserted in the pipe cleanout. If flushing does not remove the obstruction, other methods shall be used to clean the pipe. These other methods may include blowing the obstruction out with air, vacuuming, rodding, or inserting a snake, fish tape, or other suitable device. If air or water pressure is used, the working pressure inside the pipe shall not exceed the rated pressure of the pipe.

The specific pipe maintenance procedures (other than flushing) to use to remove a pipe obstruction should be selected on a case by case basis. Any procedure proposed by the Subcontractor other than flushing with water must be pre-approved by the CM.

In the event that LCS or LDS pipe obstruction cannot be dislodged, or in the very unlikely event that a pipe has undergone partial or total crushing, the following procedures should be considered in the following order:

- For the LCS or LDS, insert a new small diameter pipe within the obstructed or collapsed pipe;
- For the LCS, activate the redundant LCS pipe; and
- For the LCS or LDS pipe, if the obstruction or collapse is outside of the disposal facility containment systems, replace the pipe.

All equipment inserted into the LCS or LDS line for inspection and/or maintenance shall be decontaminated prior to removal from the OSDF battery limits.

In addition to the foregoing requirements, all mechanical and electrical equipment shall be calibrated, operated, maintained, and serviced in accordance with the manufacturer's instructions for that equipment. Manufacturer's instructions are contained in Attachment A of this Systems Plan. These instructions shall be amended to this plan once the equipment is installed by the OSDF Consultant Subcontractor and accepted by the CM.

3.5 LTS OPERATION PROCEDURES

The OSDF LTS shall be operated by the Subcontractor in conformance with the requirements of this section.

- Systems shall not be accepted for operation until the Subcontractor has completed the requirements of the Construction Acceptance Testing.
- Before taking the temporary gravity line out of service, the Subcontractor shall manually turn off the inflow valve in the LCS gravity line and the required temporary portion of the gravity line shall be removed.

3.6 LTS INSPECTION AND MAINTENANCE ACTIVITIES

- The LTS shall be inspected and maintained in accordance with the schedule and activity requirements outlined in Tables 3-2 and 3-3, or until leachate is no longer generated and an alternative activity schedule has been approved by EPA and OEPA. Specific details of the required inspection and maintenance activities are given below.

The manholes, leachate transmission system, valves, connections, sampling ports, monitoring ports, pumps, etc., shall be routinely inspected and maintained to provide for proper OSDF operation. All mechanical and electrical equipment shall be calibrated, operated, maintained, and serviced in accordance with the manufacturer's instructions for that equipment. Manufacturer's instructions are contained in Attachment A of this OSDF Plan. In addition, the inspection and maintenance activities for the LTS shall include the following:

- Confirm that appropriate warning signs are visible (e.g., confined space entry, buried pipe and conduit);

TABLE 3-2

LDS/LCS MANHOLES AND LTS GRAVITY LINE INSPECTION AND MAINTENANCE ACTIVITIES

Component	Inspections		Conditions to Check	Remedy
	Active Period	Closure Period		
LDS Manholes	Weekly	Weekly for the first three months after cell closure, then monthly	<ul style="list-style-type: none"> confirm all required signage is visible cracked, broken manhole cover leaking seal on manhole cover general structural condition of containment vessel odors, bacterial growth (containment vessel) 	<ul style="list-style-type: none"> repair and/or replace as necessary replace manhole cover replace seal check for structural integrity; if problems are found, take appropriate measures (i.e., spot seal vessel, replace vessel, etc.) and implement permanent solution flush and/or spray sodium hypochlorite into containment vessel
LCS Gravity Line	Weekly	Monthly	<ul style="list-style-type: none"> liquid in LCS gravity line containment pipe inspection of pipe for clogging or crushing (annual only) butterfly valve in proper position 	<ul style="list-style-type: none"> keep containment pipe drained; performed video inspection of pipe and attempt to identify source of leakage; if leakage is minor, continue to operate; if leakage is significant, evaluate repair options with CCM flush clogged pipe with water or mechanically clean; repair as necessary adjust valve to limit flow to permanent lift station to 200 gpm
LDS Gravity Line	Weekly	Monthly	<ul style="list-style-type: none"> liquid in LDS gravity line containment pipe inspection of pipe for clogging or crushing (annual only) 	<ul style="list-style-type: none"> keep containment pipe drained; performed video inspection of pipe and attempt to identify source of leakage; if leakage is minor, continue to operate; if leakage is significant, evaluate repair options with CCM flush clogged pipe with water or mechanically clean; repair as necessary
LTS Gravity Line	Weekly	Monthly	<ul style="list-style-type: none"> liquid in LTS gravity line containment pipe inspection of pipe for clogging or crushing (annual only) 	<ul style="list-style-type: none"> keep containment pipe drained; performed video inspection of pipe and attempt to identify source of leakage; if leakage is minor, continue to operate; if leakage is significant, evaluate repair options with CCM flush clogged pipe with water or mechanically clean; repair as necessary
LCS Manholes	Weekly	Weekly for the first three months after cell closure, then monthly	<ul style="list-style-type: none"> confirm all required signage is visible cracked, broken manhole cover leaking seal on manhole cover completion of OSDF construction general structural condition of manhole 	<ul style="list-style-type: none"> repair and/or replace as necessary replace manhole cover replace seal remove designed valves and replace with pipe spool piece check for structural integrity; if damage is observed, assess extent and make repair recommendations

TABLE 3-3
GRAVITY LINE INSPECTION AND MAINTENANCE ACTIVITIES

Component	Inspections		Conditions to Check	Remedy
	Active Period	Closure Period		
Temporary Gravity Line	Weekly	N/A	<ul style="list-style-type: none"> record accumulated flow at disc flow meter; check that flow meter is operation (3) leakage from temporary gravity line and plumbing condition of liquid transmitter for temporary gravity secondary containment system frost protection soil cover liquid in temporary gravity line containment pipe 	<ul style="list-style-type: none"> repair and/or replace as necessary investigate source of leakage, repair as necessary check sensor operations, electrical connections, and alarm light increase soil cover if inadequate cover exists keep containment pipe drained; perform video inspection of pipe and attempt to identify source of leakage; if leakage is minor, continue to operate; if leakage is significant, evaluate repair options with CCM

Notes: (1) Frequencies of inspection and maintenance activities are preliminary.
(2) LDS/LCS manholes and LTS gravity line shall be inspected after the occurrence of major earthquakes.

- Check instruments/valves (e.g., note sticking or jammed devices, corrosion, leaks, and misalignments);
- Note any temperature extremes which may exist inside the manhole (e.g., temperature outside of equipment-specific operating temperature ranges);
- Verify instrument systems status (e.g., elevation and location of automatic level switch in the lift station manhole),
- Monitor flow for pulsating, over pressure, or under pressure;
- Check for the presence of liquids in all secondary containment systems;
- Confirm pump operation/priming;
- Check hoses for physical wear and poor connections prior to each use;
- Rate condition of manhole covers;
- Note condition of concrete slab; and
- Confirm adequate protection is provided around the temporary gravity line. Should any of the above inspections reveal systems deficiencies, the conductor shall be connected utilizing a procedure approved by the Construction Manager.

3.7 EMERGENCY PROCEDURES FOR SPILLS

The OSDF leachate management system has been designed with multiple safeguards and redundancies to prevent the accumulation of liquids in the secondary containment or the overflow of liquids from the primary containment components of the leachate management system. These safeguards and redundancies include the following:

- The LDS primary containment will be equipped with a level transmitter which activates an alarm light if the liquid level is less than 6 in. from the top of the containment.
- The secondary containment of the LCS manholes will include level transmitters which will activate an alarm if the liquid level exceeds 2 in. (50 mm) from the bottom of the containment.
- The liquid level alarm consists of a submersible level transmitter, programmable logic controller, and alarm light. The level transmitter originates a signal which is sent to the programmable logic controller, and if the programmable logic controller concludes that the liquid level exceeds the maximum preset value, it activates the alarm light.
- The Subcontractor personnel shall respond to the alarm within one hour to assess the problem and to take appropriate corrective actions. A Subcontractor representative shall be "on call" 24 hours a day.

3.8 RECORDKEEPING

The Subcontractor shall maintain written records of all monitoring activities, inspections, and maintenance repairs in accordance with the recordkeeping and reporting requirements of Section 8.0 of this plan.

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4.0 FINAL COVER SYSTEM

4.1 OVERVIEW OF COVER SYSTEM

The construction, placement of impacted material, and closure of the OSDF is scheduled to occur over a 7 year period. As each cell is filled to final grade, the final cover system will be installed over that cell. Figure 1-1 of this plan presents the final cover system cross section. As seen in this figure, the topmost surface of the final cover system is vegetation. The goals of the vegetation are: (i) to stabilize the final cover systems surface with grass species that limit the erosion of topsoil; (ii) to closely follow the local vegetation; (iii) to be visually attractive; and (iv) to require minimal maintenance. The vegetation is underlain by, in turn, the topsoil layer and the vegetative soil layer.

Vegetation for newly closed cells will initially consist of selected mixes of native species. This vegetation will require inspection and maintenance in order to manage bare areas and erosion, and to intercede in the process of old field vegetation succession, which, if left unimpacted, would result in climax forest vegetation at the site within a 60 year timeframe. The topsoil and vegetative soil layer also require inspection and maintenance with respect to the potential for surface erosion, gully formation, and settlement and subsidence.

The final cover system grading plan is shown on the Construction Drawings.

4.2 FINAL COVER SYSTEM INSPECTION AND MAINTENANCE ACTIVITIES

The final cover shall be inspected and maintained in accordance with the schedule and activity requirements presented in Table 4-1 of this plan. The inspection and maintenance activities identified in this table are designed to provide a final cover system that maintains its effectiveness and performs as intended. In addition, the inspection activities are designed to detect any significant deterioration in the final cover systems components.

The inspection shall consist of a walkover survey of the entire OSDF final cover system. The visual inspection shall be conducted by traversing the cover system on a 100 ft (30 m) grid pattern. Suspect areas shall be delineated on a topographic plan of the site. The inspections shall result in evaluation of the following items, if present:

Vegetative stress (i.e., if areas without vegetation or with dead vegetation (not just dormant) or sparse vegetation and/or undesirable plant growth are present);

Erosion, bare spots, poor performing vegetation;

TABLE 4-1
FINAL COVER SYSTEM
INSPECTION AND MAINTENANCE ACTIVITIES

Component	Inspections	Condition	Remedy	Maintenance
	Closure Period			
Vegetation ¹	Monthly for at least six months	<ul style="list-style-type: none"> stressed vegetation erosion, bare spots, and poor performing vegetation unwanted deep rooted plants, weeds, or saplings 	<ul style="list-style-type: none"> evaluate cause; vegetate or remedy remove sediment; reseed and mulch remove as necessary 	<ul style="list-style-type: none"> analyze soil and fertilize revegetate as needed mechanically, chemically, or by controlled burn
Topsoil	Monthly for at least six months	<ul style="list-style-type: none"> topsoil erosion or drainage gullies topsoil settlement or subsidence burrowing animals 	<ul style="list-style-type: none"> replace topsoil; reseed and mulch; utilize non-vegetative stabilization (e.g., jute mat) if necessary add topsoil and regrade implement program (e.g., catch/release) to eradicate 	<ul style="list-style-type: none"> revegetate and refertilize reconstruct fill in holes
Cover Drainage Layer	Monthly for at least six months	<ul style="list-style-type: none"> seepage erosion of drainage material clogging or covering of cover drainage layer outlet by topsoil 	<ul style="list-style-type: none"> Construction Manager will evaluate placing granular "cap" over cover drainage outlet and develop corrective action plan remove topsoil, replace granular soil at outlet as necessary 	<ul style="list-style-type: none"> replace, regrade material replace, regrade material

- Notes:
- (1) See the text of this Section for requirements related to grass mowing.
 - (2) Frequencies of inspection and maintenance activities are preliminary. These frequencies will be finalized as material supplier's inspection and maintenance instructions are available.
 - (3) Final cover system shall be inspected after the occurrence of major earthquakes.

TABLE 4-1 (continued)
FINAL COVER SYSTEM
INSPECTION AND MAINTENANCE ACTIVITIES

Component	Inspections	Condition	Remedy	Maintenance
	Closure Period			
Final Cover System	Monthly for at least six months	<ul style="list-style-type: none"> • toe bulges • tension cracks 	<ul style="list-style-type: none"> • notify the Construction Manager to investigate and develop corrective action plan • notify the Construction Manager to investigate and develop a corrective action plan 	<ul style="list-style-type: none"> • cordon off affected area; maintenance/repair activities will be defined by the investigation results • cordon off affected area; maintenance/repair activities will be defined by the investigation results
Final Cover System	Monthly for at least six months	<ul style="list-style-type: none"> • leachate seep 	<ul style="list-style-type: none"> • notify the Construction Manager to investigate and develop a corrective action plan 	<ul style="list-style-type: none"> • contain leachate; cordon off affected area; maintenance/repair activities will be defined by the investigation results
Surveying	Monthly for at least six months	<ul style="list-style-type: none"> • survey monuments 	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • obtain survey data

Notes: (1) Frequencies of inspection and maintenance activities are preliminary.
(2) Final cover system shall be inspected after the occurrence of major earthquakes.

Unwanted rooted plants, weeds, or saplings;
Topsoil erosion or drainage gullies;
Topsoil settlement or subsidence;
Presence of burrowing animals;
Seepage erosion of cover drainage material;
Clogging or covering of cover drainage layer outlet by topsoil or any other material(s);
Tension cracks which may be indicative of the instability of cover systems;
Toe bulges which may be indicative of the instability of cover systems; and
Leachate seeps.

Note that the need for, and frequency of, grass cutting will depend on the final seed mix selected for the OSDF final cover system. Mowing shall occur at least once annually (in the late fall) at a time when the final cover system is reasonably dry. Mowing equipment shall not cause rutting or disturbance of topsoil. More frequent mowing will be specified if needed, in a subsequent version of this Systems Plan based on the final seed mix selected for the OSDF.

Maintenance activities for the OSDF final cover system shall include surveying of settlement monuments placed on the OSDF final cover system. These monuments shall be surveyed monthly for at least six months after installation, then semi-annually for five years, then annually.

Repairs to the OSDF final cover systems, except vegetation and topsoil, shall not be made unless approved by the CM. Any repair activity involving any component of the final cover systems shall be in full conformance with the original Project Specifications for that component.

Woody species reproduction that develops in the OSDF final cover system shall be eliminated mechanically, chemically or by fire. Many woody species maintain the root systems when cut and rapidly resprout. The root systems continues to grow through repeated cuttings and can become extensive. For this reason, chemical herbicides (spraying of individual trees and shrubs) or fire shall be preferred for control of woody species reproduction, as eradication of the whole plant including the root systems is a primary goal. A combination of mechanical and chemical treatment where cut stumps are treated with herbicide to prevent resprouting may also be considered. The most effective method for managing woody vegetation shall be evaluated for the OSDF by the Subcontractor based on available equipment, expertise, and cost.

It is noted that additional Systems requirements for the OSDF project, which the Subcontractor shall follow, are contained in the: (i) *OSDF Borrow Area Management and Restoration Plan*; and (ii) *OSDF Surface-Water Management and Erosion Control Plan*.

4.3 RECORDKEEPING

The Subcontractor shall maintain written records of all monitoring, operational activities, maintenance inspections, and maintenance repairs in accordance with recordkeeping and reporting requirements of Section 8.0 of this Systems Plan.

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5.0 TEMPORARY SUPPORT FACILITIES, UTILITIES, AND SITE SECURITY FENCE

5.1 DESCRIPTION OF SYSTEMS

The function of the temporary support facilities and utilities is to provide support for the OSDF during construction, impacted material placement, and closure. Temporary support facilities include survey benchmarks, administrative support trailers, equipment maintenance facilities, decontamination facilities, and material storage areas. Utilities include electricity, water, wastewater, and telephone system. A site security fence will be erected during construction and will be dismantled at the end of construction.

The support facilities and utilities must be maintained to provide adequate and reliable support for the construction activities that will be performed for the OSDF. The support facilities and utilities must be maintained in a manner that is consistent with the requirements of applicable utility codes at the FEMP and with applicable health and safety requirements for the FEMP.

A site security fence, consisting of 6-ft (1.8-m) high chain linked fence with three strands of barbed wire on the top of the fence will be erected around the OSDF construction area. The fence gates will be locked with keyed-alike locks. The location of the security fence will be periodically relocated as cell construction progresses from north to south. If it is determined that a fence is to remain around the OSDF (permanently), it will be evaluated for both security and aesthetics.

5.2 TEMPORARY SUPPORT FACILITIES INSPECTION AND MAINTENANCE ACTIVITIES

Temporary support facilities, utilities, and site security fence shall be inspected and maintained in accordance with the schedule and activity requirements presented in Table 5-1. During winter shutdown, unoccupied facilities shall be inspected to detect any breach or damage to the systems contained in the facilities and to ensure the systems are functioning properly.

The permanent survey benchmarks shall be inspected for any evidence of damage or disturbance. If such evidence is observed, it should be noted and reported. The CM will then have the benchmark resurveyed and re-established if necessary.

The administrative support trailers and equipment maintenance facilities shall be inspected for the following items: (i) leaks in roof, windows and doors; (ii) structurally sound stairs, access ways and fire escapes; (iii) security of doors and windows; (iv) condition of tie-downs (for trailers only); (v) condition the heating, ventilating, and air conditioning (HVAC) systems; (vi) condition of associated storage tanks; and (vii) cleanliness.

TABLE 5-1

**TEMPORARY SUPPORT FACILITIES AND SITE SECURITY FENCE
INSPECTION AND MAINTENANCE ACTIVITIES**

Component	Inspections	Condition	Remedy	Maintenance
	Closure Period			
Temporary Facilities (Vacant)	Semi-Annually	<ul style="list-style-type: none"> inadequate and unreliable support facilities damage or broken items 	<ul style="list-style-type: none"> maintain livable condition, clean, and workable equipment replace if needed, repair 	<ul style="list-style-type: none"> janitorial services as needed
Utilities	Semi-Annually	<ul style="list-style-type: none"> confirm utility is useable confirm utility grounded 	<ul style="list-style-type: none"> replace if needed, repair 	<ul style="list-style-type: none"> maintain as needed; use lockout program
Storage areas/ stockpiles/ temporary decontamination facilities	Daily	<ul style="list-style-type: none"> ponding of water protection from elements adequate storage or disposal 	<ul style="list-style-type: none"> regrade if needed repair cover clean, maintain workable equipment, fix as needed 	<ul style="list-style-type: none"> clean daily provide sufficient ballast for cover daily inspections of equipment proper disposal of hazardous materials
Fence	Quarterly	<ul style="list-style-type: none"> damaged under fence erosion 	<ul style="list-style-type: none"> repair or replace as necessary repair erosion or extend fence as necessary 	<ul style="list-style-type: none"> replace or repair fence provide erosion and sedimentation control
Gates	Quarterly	<ul style="list-style-type: none"> tampering/damage to locks 	<ul style="list-style-type: none"> repair or replace as necessary 	<ul style="list-style-type: none"> install proper lock
Warning Signs	Quarterly	<ul style="list-style-type: none"> damaged or missing warning signs 	<ul style="list-style-type: none"> replace as needed 	<ul style="list-style-type: none"> install warning signs to fence or gates

N/A - Not applicable

Notes: (1) Frequencies of inspection and maintenance activities are preliminary.

(2) Temporary support facilities and site security fence shall be inspected after the occurrence of major earthquakes.

Equipment decontamination facilities will require routine maintenance of pumps and valves and cleaning out of sump areas. The operation, inspection, and maintenance of all electrical and mechanical equipment shall be in accordance with the manufacturer's instructions. These instructions are provided in Attachment B of this Systems Plan.

Material storage areas shall be inspected to ensure that the area is secure and trafficable. If the area is not secure, security fence shall be installed. If the area is not trafficable due to excessive rutting, poor drainage, etc., the Subcontractor shall notify the CM. The CM will evaluate the situation and issue a plan for corrective actions.

Utilities shall be inspected to ensure that no deterioration has occurred and that proper grounding of system is functioning. Utilities shall meet all applicable standards (i.e., Cincinnati Gas and Electric, NEC, ASTM, ASCE, ANSI, ACI, and FEMP site facility standards).

The construction security fence shall be inspected for the following items: (i) holes in the mesh; (ii) three strands of barbed wire on top of the fence; (iii) security of all access points; and (iv) warning signs posted on 100 ft (30 m) centers along the fence. Repair work or replacement of the security fence shall be performed in a timely manner to prevent unauthorized access to the OSDF. After closure of the OSDF, the construction security fence shall be dismantled, and disturbed areas shall be regraded and re-vegetated. A permanent fence (that is aesthetically pleasing to stakeholders) may be installed and maintained for the duration of the post-closure period. If a permanent fence is determined necessary; the details will be provided in a subsequent design submittal.

Maintenance of temporary support facilities and utilities shall include repair or replacement of items as necessary. All new materials and installation work for repair or maintenance activities shall be in full conformance with the original Project Specifications.

5.3 RECORDKEEPING

The Subcontractor shall maintain written records of all monitoring, inspections, and maintenance repairs in accordance with recordkeeping and reporting requirements of Section 8.0 of this Systems Plan.

6.0 OSDF ACCESS ROADS

6.1 DESCRIPTION OF ROADS

Access to the OSDF will be continuously controlled. Access to the OSDF will be provided by: (i) construction haul roads (ii) impacted material haul roads; and (iii) leachate transmission systems access corridor.

Access roads to the OSDF will be developed in phases in conjunction with the phased development of the OSDF. Access to the OSDF must be maintained to provide safe, efficient ingress and egress to the work areas and other areas. Safety and traffic control signals at critical locations (e.g., flagmen) will be utilized as needed throughout construction (e.g., intersection of the relocated north entrance road and the construction haul road) to mark potential hazard areas. Traffic will be routed and controlled in a manner that maintains an orderly flow of vehicles to minimize accidents and to avoid delays in the construction. Road maintenance and control will be the responsibility of the Subcontractor.

The layout of the roads providing access to the Construction Drawings.

6.2 ACCESS ROADS INSPECTION AND MAINTENANCE ACTIVITIES

Access roads to the OSDF shall be inspected and maintained in accordance with the schedule and activity requirements presented in Table 6-1. The Subcontractor shall be responsible for safe and efficient OSDF access road operations during OSDF construction, filling, and closure. The Subcontractor shall maintain all road signage in a clearly visible state. Road signage shall be increased if needed to achieve safe and efficient traffic operations. If necessary, the Subcontractor shall provide traffic control personnel at key locations.

Road maintenance shall be performed utilizing appropriate construction equipment. Areas of soft subgrade soil, pumping, or excessive rutting shall be improved by removing and replacing subgrade soils, installing a geotextile separation layer (if required), and replacing/increasing the road aggregate. Areas of the road that are frequently wet or inundated shall be improved by regrading adjacent areas to change stormwater runoff patterns or cutting roadside ditches to drain near-surface perched ground water.

As necessary, the Subcontractor shall maintain the OSDF access roads free of snow accumulations that would interfere with OSDF activities. The Subcontractor shall prevent the generation of excessive road dust such that fugitive emission levels remain in full compliance with

TABLE 6-1
ACCESS ROADS INSPECTION AND MAINTENANCE ACTIVITIES

Component	Inspections		Conditions to Check	Remedy	Maintenance
	Active Period	Closure Period			
Access Roads	Weekly and following rain storms	Monthly and following rain storms	<ul style="list-style-type: none"> inadequate traffic control 	<ul style="list-style-type: none"> improve traffic control 	<ul style="list-style-type: none"> install signage (e.g., stop signs, traffic flow arrows) or provide traffic control personnel
			<ul style="list-style-type: none"> soft soil, pumping, or excessive rutting 	<ul style="list-style-type: none"> remove and replace subgrade soil, add aggregate geotextile separation layer, if necessary 	<ul style="list-style-type: none"> grade as necessary to provide positive drainage
			<ul style="list-style-type: none"> roadway inundation 	<ul style="list-style-type: none"> improve storm water routing and/or eliminate perched ground water 	<ul style="list-style-type: none"> regrade area to change runoff patterns; cut roadside ditches to drain perched ground water
			<ul style="list-style-type: none"> snow 	<ul style="list-style-type: none"> clear roadway 	<ul style="list-style-type: none"> plow snow
			<ul style="list-style-type: none"> excessive road dust 	<ul style="list-style-type: none"> reduce dust generation 	<ul style="list-style-type: none"> use water truck to suppress dust; apply chemical dust suppressant (only after Construction Manager approval)

Notes: (1) Frequencies of inspection and maintenance activities are preliminary. These frequencies will be finalized as manufacturer's equipment operating and maintenance instructions are available.

FEMP Policy. Dust suppression shall be achieved by using a water truck. Alternatively, periodic application of dust suppressants, such as magnesium or calcium chloride, liquid polymer emulsion, or agglomerating chemicals may be considered, but only with approval of the CM.

Any repair activity to roadways within the OSDF battery limit shall utilize materials and procedures in full conformance with the original Project Specifications.

6.3 RECORDKEEPING

The Subcontractor shall maintain written records of all monitoring, inspection, and repairs in accordance with recordkeeping and reporting requirements of Section 7.0 of the Systems Plan.

7.0 RECORDKEEPING AND REPORTING

The Subcontractor shall be responsible for preparing and maintaining accurate and complete records of all inspection, operation, and maintenance activities. The Subcontractor is also responsible for reporting these activities to the CM.

This section of the plan describes the general record procedures that will be followed by the personnel performing OSDF activities. These procedures will ensure that consistent and reproducible records are developed when the work is performed by various individuals. This section also addresses the Subcontractor reporting requirements.

7.1 RECORDKEEPING PROCEDURES

The Subcontractor shall be responsible for establishing the detailed procedures and requirements for the collection, storage, maintenance, and disposition of all OSDF records. Records shall be protected from damage or deterioration by being placed in lockable, fire-proof filing cabinets and by duplication and/or microfilming. Records shall be filed in accordance with a subject file index and shall be retained at the FEMP for 30 years after closure of the OSDF. Required records shall include, but not be limited to, field logbooks, other data collection forms, equipment calibration records, cost data, drawings, maintenance records, and all associated reports.

All original data collected in the field by the Subcontractor shall be considered a permanent record. This includes all field logbooks, other data forms, and photographs. All of these documents shall be authorized by the signature and date of the originator. Errors shall be corrected by crossing a single line through the error and entering the correct information. Corrections will be initialed and dated by the person making the correction.

7.2 REPORTING PROCEDURES

After each inspection and maintenance activity, a draft report that includes an executive summary, copies of field logs, photographs, checklist forms, and other pertinent data shall be submitted to the CM for review, approval, the forwarding to DOE. Following review and approval, final copies of the inspection report and associated documents shall be submitted to OEPA and USEPA.

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8.0 REFERENCES

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ATTACHMENT A

OWNER'S MANUALS FOR LEACHATE MANAGEMENT SYSTEM EQUIPMENT

(TO BE PROVIDED BY THE OSDF CONSTRUCTION CONTRACTOR AS PART OF
CONSTRUCTION ACCEPTANCE)

ATTACHMENT B

OWNER'S MANUALS FOR DECONTAMINATION FACILITIES

(TO BE PROVIDED BY THE OSDF CONSTRUCTION CONTRACTOR AS PART OF
CONSTRUCTION ACCEPTANCE)